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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WANG, TED M

ART UNIT PAPER NUMBER

2634

[Handwritten signature]

DATE MAILED: 03/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/786,275

Applicant(s)

BOULANGER ET AL.

Examiner

Ted M Wang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 March 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>5</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-5 are pending in the application.

Drawings

2. Figures 1-4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to because In Fig.5,
 - "(DOTk)" should be changed to "(DOTk)⁽²⁾", and
 - "(CROSSk)" should be changed to "(CROSSk)⁽²⁾".

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to for not labeling all the elements in the figures. For example, in Fig.1, 10 (I) and 10 (Q) should be labeled as digital filter (I) and (Q) respectively; 12 (I) and 12 (Q) should be labeled as delay or T_b respectively, 14 should be labeled as binary multiplier, 16 should be labeled as clock integration and regeneration circuit, and 18 should be labeled as digital programming, etc.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

5. The disclosure is objected to because of the following informalities: *
- Page 2 lines 6-8, "A(t)" should be changed to "A'(t)", and
 - Page 3 lines 1-4, delete " The DOT and CROSS signals considered together allow to determine the integer times $\Pi/2$ of the phase displacement between successive symbols", and
 - Page 10 lines 1, 7, page 14 lines 1 and 2, and page 15 lines 15,16, 18, and 19, ")" should be added to the equations, and
 - Page 10 line 11, Θ_u should be changed to φ_u , and
 - Page 13 line 11, " j_u^2 " should be changed to " i_u^2 "
 - Claim 4 line 10, " $Q_n I_{n-1} - I_n Q_{n-1}$ " should be changed to " $Q_k I_{k-1} - I_k Q_{k-1}$ ", and
 - Claim 4 line 14, " $(DOT_k^{(1)})$ " should be changed to " $(DOT_k^{(1)})$ ".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lattard et al. (US6,115,413) in view of "On the implementation and performance of

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single and double differential detection schemes, *Simon, M.K.; Divsalar, D.*;

Communications, IEEE Transactions on, Volume: 40, Issue: 2, Feb. 1992

Pages:278 - 291.

- In regard claim 1, Lattard et al. discloses a receiver with a method for receiving a CDMA signal, comprising an operation of correlation with appropriate pseudo-random sequences (Fig.1 element 18, Fig.2 elements 50 (I) and 50 (Q), column 2 line 58 – column 3 line 14, and column 3 line 51 – column 4 line 56), an operation of synchronization for locating data in the correlation signal obtained (Fig.1 and Fig.2) and a single delayed multiplication of the sampled correlation signal by performing a first delayed multiplication consisting in multiplying a sample of the correlation signal by the conjugate preceding sample except specifically teaching that the synchronization operation implements double delayed multiplication of the sampled correlation signal by performing a second delayed multiplication consisting in multiplying a sample of the signal thus obtained by the conjugate preceding sample of said signal obtained.

Divsalar et al. discloses a double differential detection scheme that implements double delayed multiplication of the sampled correlation signal by performing a second delayed multiplication consisting in multiplying a sample of the signal thus obtained by the conjugate preceding sample of said signal obtained (Fig.1 and page 278, Section I, Introduction) in order to improve the system error probability performance.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Lattard's receiver in view of Divsalar's disclosure in order to improve the system error probability performance.

- In regard claim 2, the limitation of that a maximum of the signal obtained through double delayed multiplication is searched for, and a synchronization signal (S) corresponding to maximum is delivered can further be taught by Lattard et al. in Fig. 6 and 7 element 100 and column 7 lines 51- column 8 line 41.
- In regard claim 3, the limitation that an average is calculated of two successive maximum values obtained before the synchronization signal is generated can further be taught by Lattard et al. in Fig. 6 and 7 and 8 element 100 and column 7 lines 51- column 8 line 41.
- In regard claim 4, all limitation can further be taught in column 3 line 49 – column 4 line 55, and column 6 line 9 – column 7 line 21, and claims 1 and 7. Note that the second delayed multiplication calculation can be derived by the same way as cited above.
- In regard claim 5, which is a receiver claim related to claim 1, all limitation is contained in claim 1. The explanation of all the limitation is already addressed in the above paragraph.

Conclusion

8. Reference US5,588,026 and Multiple differential detection of continuous phase modulation signals, Makrakis, D.; Feher, K.; Vehicular Technology, IEEE Transactions on , Volume: 42 , Issue: 2 , May 1993, Pages:186 – 196, are cited because they are put

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pertinent to the double differential detection. However, none of references teach detailed connection as recited in claim.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M Wang whose telephone number is (703) 305-0373. The examiner can normally be reached on 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Chin can be reached on (703) 305-4714. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

Ted M Wang
Examiner
Art Unit 2634

Ted M. Wang



STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600